

## INTERNATIONAL SEARCH REPORT

PCT/IB 02/04004

A. CLASSIFICATION OF SUBJECT MATTER  
 IPC 7 H04Q11/00 H04L12/46 H04L12/56

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
 IPC 7 H04Q H04L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2001/034793 A1 (MADRUGA EWERTON L ET AL) 25 October 2001 (2001-10-25) paragraph [0046] paragraph [0053] ---	1,4-7
A	EP 0 951 198 A (NIPPON ELECTRIC CO) 20 October 1999 (1999-10-20) paragraph [0019] paragraph [0058] ---	1-24
A	WO 02 45317 A (WORLDCOM INC) 6 June 2002 (2002-06-06) abstract -----	1-24

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

\* Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

14 May 2003

Date of mailing of the international search report

03.06.2003

Name and mailing address of the ISA

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Authorized officer

STEFAN HANSSON/JA A

## INTERNATIONAL SEARCH REPORT

PCT/IB 02/04004

Patent document cited in search report		Publication date		Patent family member(s)		Publication date
US 2001034793	A1	25-10-2001	NONE			
EP 0951198	A	20-10-1999		AU 2039399 A EP 0951198 A2 JP 2000032007 A		21-10-1999 20-10-1999 28-01-2000
WO 0245317	A	06-06-2002		AU 1790202 A WO 0245317 A2		11-06-2002 06-06-2002



Europäisches  
Patentamt

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**LETTER ACCOMPANYING SUBSEQUENTLY FILED ITEMS**

The document(s) listed below is (are) subsequently filed documents pertaining to the following application:

Application number

02772655.3

Applicant's or representative's reference

MCR/41125EP1

	Description of document	Original file name	Assigned file name
1	Document concerning fees and payments	26 May 2005 letter to EPO.pdf	FEES-1.PDF
2	Document concerning fees and payments	26 May 2005 fee voucher.pdf	FEES-2.PDF

**Annotations**

**Statement**

The undersigned hereby declares that the subsequently filed items do NOT contain or are NOT intended to contain any communication relating either to an appeal or to an opposition (OJ EPO 2003, 609: ".....This possibility is not yet available in opposition and appeal proceedings; in such proceedings, therefore, the electronic filing of documents is not admissible.").

**Signatures**

**Date** 26 May 2005  
**Signed by:** /Matthew Read/  
**Capacity:** ( Representative )

Venner Shipley

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26 May 2005

Dear Sirs,

European Patent Application No. 02772655.3  
**Multicast Data Transfer**  
**Nokia Corporation**  
Our ref: DJP/41125EP1

In response to the communication dated 9 May 2005, we enclose our fee voucher authorising you to debit our deposit account for the claims fees due on this application, namely claims 11 to 24.

Yours faithfully,

  
Matthew Read  
Authorised Representative

Partners:	Associates:	Alumni:
Alan Venner MTTMA	Edmund Hartigan RA MTTMA	Albus Elend MA DPhil CPA FIM
Matthew Read BA CPA EPA	Pawel Piotrowicz BA PhD CPA EPA	Olivia Johnson MA
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Silvia Gill MA MSc CPA EPA	Philip Harrison MSc	Sarah Al-Azam MSc
	Erica Orton MChem	Stephen Johnson MChem DPhil
	Tanya Head BA LPAI	David Paton MSc
		Iain Russell MA

## **Payment of fees and costs**

European Patent Office  
Cash and Accounts Department  
Erhardtstr. 27  
D-80298 München

## Payer's reference

MCR/DJP/41125EP1

### **Mode of Payment**

**Bank/Giro office**

**Matthew Read  
Venner Shipley LLP  
20 Little Britain  
London EC1A 7DH  
United Kingdom**

**Bank/Giro Transfer**

**Enclosed Cheque No.**

Enclosed Cheque No.

Debit from deposit account with the EPO is requested      Deposit Account No. **28050158**

Patent application/Patent No. (A separate form is required for each application)

EP 02772655.3

PCT

Total EUR 560

**Signature**

Mutter Karl

**Place/Date:**

London 26 May 2005



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Patent Office

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### Receipt of Electronic Submission

We hereby acknowledge receipt of the following subsequently filed document(s):

Submission Number	53162	
Application Number	EP02772655.3	
Date of Receipt	26 May 2005	
Receiving Office	European Patent Office, The Hague	
Your Reference	MCR/41125EP1	
Applicant		
Number of Applicants	1	
Documents Submitted	EPF1038.PDF FEES-2.PDF package-data.xml	FEES-1.PDF ep-sfd-request.xml
Submitted by	CN=J Hester 1309,O=Venner Shipley LLP,C=GB	
Method of submission	Online	
Timestamp of Receipt	26 May 2005 14:36:09	
Official Digest of Submission	3A:00:E9:F0:D7:F2:4D:90:BE:D0:2B:64:E8:71:E1:78:8B:6 D:13:39	

/European Patent Office/



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**Europäisches Patentamt**

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stelle

**European Patent Office**

Receiving  
Section

**Office européen des brevets**

Section de  
Dépôt

Read, Matthew Charles  
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GRANDE BRETAGNE

Datum/Date

11/05/05

Zeichen/Ref./Réf.	Anmeldung Nr./Application No./Demande n°./Patent Nr./Patent No./Brevet n°.
MCR/41125EP1	02772655.3-2416 / 1543701
Anmelder/Applicant/Demandeur/Patentinhaber/Proprietor/Titulaire	
Nokia Corporation	

**NOTIFICATION OF EUROPEAN PUBLICATION NUMBER AND INFORMATION  
ON THE APPLICATION OF ARTICLE 67(3) EPC**

The provisional protection under Article 67(1) and (2) EPC in the individual Contracting States becomes effective only when the conditions referred to in Article 67(3) EPC have been fulfilled (for further details, see information brochure of the European Patent Office "National Law relating to the EPC" and additional information in the Official Journal of the European Patent Office).

Pursuant to Article 158(1) EPC the publication under Article 21 PCT of an international application for which the European Patent Office is a designated Office takes the place of the publication of a European patent application.

The bibliographic data of the above-mentioned Euro-PCT application will be published on 22.06.05 in Section I.1 of the European Patent Bulletin.

The European publication number is 1543701.

In all future communications to the European Patent Office, please quote the application number plus Directorate number.

**RECEIVING SECTION**





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Direction générale 1

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EPO Customer Services

Tel.: +31 (0)70 340 45 00

Date  
09-05-2005

Reference MCR/41125EP1	Application No./Patent No. 02772655.3 - PCT/IB0204004
Applicant/Proprietor Nokia Corporation	

**Communication pursuant to Rules 109 and 110 EPC**

**(1) Amendment of application documents, especially the claims (Rule 109 EPC)**

The above mentioned international (Euro-PCT) application has entered the European phase, or can do so, once the necessary conditions are fulfilled.

Under Articles 28, 41 PCT, Rules 52, 78 PCT and Rule 86(2) to (4) EPC, the applicant may amend the application documents after receiving the international search report.

**Whether or not he has already done so, he now has a further opportunity to file amended claims or other application documents within a non-extendable time limit of ONE MONTH after notification of the present communication (Rule 109 EPC).**

The claims applicable on expiry of the above time limit, i.e. those filed on entry into the European phase or in response to the present communication, will form the basis for the calculation of any claims fee to be paid (see page 2) and for any supplementary search to be carried out under Article 157(2) EPC (Rule 109 EPC).

--2/

**(2) Claims fees under Rule 110 EPC**

If the application documents on which the European grant procedure is to be based comprise more than ten claims, a claims fee shall be payable for the eleventh and each subsequent claim within the period provided for in Rule 107(1) EPC.

- Based on the application documents currently on file, all necessary claims fees have already been paid (or the documents do not comprise more than 10 claims).
- All necessary fees will be/have been debited automatically according to the automatic debit order.
- The claims fees due for the claims 11 to 0024 were not paid within the above-mentioned period.

Any non-paid claims fee, either based on the current set of claims or on any amended claims to be filed pursuant to Rule 109 EPC (see page 1), may still be validly paid within a non-extendable period of grace of **ONE MONTH** after notification of this communication.

If a payment is made for only some of the claims, it must be indicated for which claims it is intended. If a claims fee is not paid in due time, the claim concerned is deemed to be abandoned (Rule 110(4) EPC).

If claims fees have already been paid, but on expiry of the above-mentioned time limit there is a new set of claims containing fewer fee-incurring claims than previously, the claims fees in excess of those due under Rule 110(2), 2nd sentence, EPC will be refunded (Rule 110(3) EPC).

You are reminded that any supplementary search under Article 157(2) EPC will relate only to the last set of claims applicable on expiry of the above time limit AND will be confined to those fee-incurring claims for which fees have been paid in due time.

**The fee for the eleventh and each subsequent claim is EUR 40,00.**

**RECEIVING SECTION**



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Date  
06.04.05

Reference MCR/41125EP1	Application No./Patent No. 02772655.3- -IB0204004
Applicant/Proprietor Nokia Corporation	

#### Refund of fees

The following fees were paid in respect of the application 02772655.3:

Fee	Code	Voucher No	Date	Currency	Amount
Examination fee	006	00204280	02.03.05	EUR	1 144,00

#### REFUND ORDER

1. In accordance with Art. 12(2) Rules relating to Fees in conjunction with Rule 104b(6) EPC, 50 % of the examination fee will be refunded.
2. The refund will be done by:  
CREDITING YOUR DEPOSIT ACCOUNT 28050158.

Amount refundable:	Code	Currency	Amount	Voucher No
	006	EUR	572,00	00245800
Total:		EUR	572,00	

The Authorising Officer  
Schubert

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brevets . European Patent Office . Europa  
Office européen des brevets . Office européen des brevets



To the European Patent Office

Entry into the European phase (EPO as designated or elected  
Office)

European application number	EP02772655.3
PCT application number	PCT/IB2002/04004
PCT publication number	WO04030399
Applicant's or representative's reference	MCR/4112SEP1

**1. Applicant**

Particulars of the applicant(s) are contained in the international publication or were recorded by the International Bureau subsequent to the international publication.

Changes which have not yet been recorded by the International Bureau are set out here:

**Address for correspondence**

**2. Representative 1**

This is the representative who will be listed in the Register of European Patents and to whom notifications will be made

Name

Read, Matthew

**Address of place of business**

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Any additional representative(s) is/are listed here:

Jump, Timothy  
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Gill, Siân  
Grey, Ian  
Walaski, Jan  
Plotrowicz, Paweł  
Derry, Paul  
Elend, Almut  
Mair, Julia  
Woodward, John  
Pearson, Sarah  
Thomson, Craig  
Cowley, Catherine

---

**3. Authorisation**

An individual authorisation is attached.

A general authorisation has been registered under No:

A general authorisation has been filed, but not yet registered.

The authorisation filed with the EPO as PCT receiving Office expressly includes the European phase.

---

**4. Request for examination**

Examination of the application under Art. 94 EPC is hereby requested. The examination fee is being (has been, will be) paid.

Request for examination in an admissible non-EPO language:

Täten pyydetään hakemuksen tutkimista artiklan 94 mukaisesti.

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**5. Copies**

One or more additional sets of copies of the documents cited in the supplementary European search report are hereby requested.

Number of additional sets of copies

---

**6. Documents intended for proceedings before the EPO**

6.1 Proceedings before the EPO as designated Office (PCT I) are to be based on the following documents:

the application documents published by the International Bureau (with all claims, description and drawings), where applicable with amended claims under Art. 19 PCT

unless replaced by the amendments attached.

*Where necessary, clarifications should be attached as 'Other Documents'*

6.2 Proceedings before the EPO as elected Office (PCT II) are to be based on the following documents:

the documents on which the international preliminary examination report is based, including any annexes

unless replaced by the amendments attached.

*Where necessary, clarifications should be attached as 'Other Documents'*

If the EPO as International Preliminary Examining Authority has been supplied with test reports, these may be used as the basis of proceedings before the EPO.

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**7. Translations**

Translations in one of the official languages of the EPO (English, French, German) are attached as crossed below:

\* *In proceedings before the EPO as designated or elected Office (PCT I + II):*

Translation of the International application (description, claims, any text in the drawings) as originally filed, of the abstract as published and of any indication under Rule 13bis.3 and 13bis.4 PCT regarding biological material

Translation of priority application(s)

It is hereby declared that the international application as originally filed is a complete translation of the previous application (Rule 38(5) EPC)

\* *In addition, In proceedings before the EPO as designated Office (PCT I):*

Translation of amended claims and any statement under Art. 19 PCT, if the claims as amended are to form the basis for the proceedings before the EPO (see Section 6).

\* *In addition, In proceedings before the EPO as elected office (PCT II):*

Translation of annexes to the international preliminary examination report

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**8. Biological material**

The invention relates to and/or uses biological material deposited under Rule 28 EPC.

The particulars referred to in Rule 28(1)(c) EPC (if not yet known, the depositary institution and the identification reference(s) [number, symbols, etc.] of the depositor) are given in the international publication or in the translation submitted under Section 7 on:

page(s) / line(s)

A copy of the receipt(s) of deposit issued by the depositary institution

is attached

will be filed at a later date

A waiver of the right to an undertaking from the requester pursuant to Rule 28(3) EPC is attached.

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**9. Nucleotide and amino acid sequences**

The items required under Rules 5.2 and 13ter PCT and Rule 111(3) EPC have already been furnished to the EPO.

The sequence listing as part of the description is attached in PDF format.

The sequence listing does not include matter that goes beyond the content of the application as filed.

In addition, the sequence listing data is attached in computer-readable form in accordance with WIPO Standard 25.

The sequence listing data in computer-readable form in accordance with WIPO Standard 25 is identical to the sequence listing in PDF format.

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**16. Signature(s) of applicant(s) or representative**

Place:      **London**  
Date:        **25 February 2005**  
Signed by:    **Subject: GB, Venner Shipley LLP, J. Hester 1309**  
                **Issuer: , European Patent Office, European Patent Office CA**  
Capacity:     **( Representative )**

---

For employees (Art. 133(3) EPC) having a general authorisation:  
General authorisation No.

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**10. Designation fees**

10.1 It is currently intended to pay seven times the amount of the designation fee. The designation fees for all the EPC contracting states designated in the international application are thereby deemed to have been paid (Art. 2 No. 3 RFees).

AT BE BG CH&LI CY CZ DE DK EE ES FI FR GB GR HU IE IT LU MC NL PL PT RO  
SE SI SK TR

10.2 The declaration in No. 10.1 does not apply. Instead, it is currently intended to pay fewer than seven designation fees for the following EPC contracting states designated in the international application:

It is requested that no communications under Rule 108(3) EPC be issued in respect of any contracting states not indicated.

10.3 If an automatic debit order has been issued (Section 12), the EPO is authorised, on expiry of the basic period under Rule 107(1)(d) EPC, to debit seven times the amount of the designation fee. If states are indicated in No. 10.2, the EPO will debit designation fees for those states only, unless instructed otherwise before the basic period expires.

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**11. Extension of the European patent**

This application is also considered as being a request for extension to all the non-contracting states to the EPC designated in the international application with which "extension agreements" were in force on the date of filing the international application. However, the extension only takes effect if the prescribed extension fee is paid.

It is currently intended to pay the extension fee for the following states:

---

**12. Debit from deposit account** 

Currency

EUR

The European Patent Office is hereby authorised to debit from the following deposit account any fees and costs indicated on the fees page.

Deposit account number  
Account holder

28050158  
Venner Shipley LLP

---

**13. Reimbursements (if any) should be made to the following EPO deposit account:** 

Number and account holder 28050158

---

**14. Fees**

		Factor applied	Fee schedule	Amount to be paid
14-1	002 Search fee	0	690.00	0.00
14-2	005 Designation fee	7	75.00	525.00
14-3	006 Examination fee	1 (80%)	1 430.00	1 144.00
14-4	020 Basic national fee for an international application	1	90.00	90.00
Total:			EUR	1 759.00

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**15. Annotations**

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Figure 1 is a block diagram of a prior communication system 1, for multicasting information from a content provider, i.e., host 2, to a plurality of receiver hosts 3 via the Internet 4. For simplicity, the data path 5 is depicted as extending directly from the content provider 2 to a router 6 without intervening stages, such as other transmitters or routers, which may be located between these nodes. The data paths leading from the content provider 2 to the receiver hosts 3a-3c diverge at the router 6. Situations where this divergence include those where the receiver hosts 3 do not belong to the same sub-network, where the receiver hosts 3 are served by different transmitters 7 or where the radio access network is not multicast enabled.

10

Instead of sending a separate stream of data packets A-D for each individual receiver host 3a, 3b, the content provider 2 provides a single data stream 5. The data stream is replicated by a multicast-enabled edge router 6 wherever the paths to the different receiver hosts 3a, 3b diverge. The router 6 copies the incoming data packets A-E, producing duplicate data streams 8a, 8b for transmission to the receiver hosts 3a, 3b. As the content provider 2 transmits only a single data stream 5, the use of its system resources and the network load are reduced when compared with a unicast system. Furthermore, as the transmission of replicated data is kept to a minimum, multicasting may be used in wide area networks where broadcasting is 15 unfeasible.

20

There are two types of multicasting services. In the first, a content provider has a reserved bandwidth for delivering a predetermined service to a group of end-users. The second type allows end-users to select the service provided to them. In both 25 cases, a user can receive the multicast stream of data by submitting a request to join the group by sending a message to the content provider in a format specified by the Internet Engineering Task Force (IETF). The user can leave the multicast group by submitting a corresponding request.

30

Multicasting is a suitable mechanism for providing end-users with a continuous service and has limited applicability for "one-shot" transmissions. For example, a

### Brief Description of the Drawings

An embodiment of the invention will now be described with reference to the accompanying drawings, in which:

5

- Figure 1 is a block diagram of a prior art communication system;
- Figure 2 is a block diagram of a communication system in accordance with an embodiment of the present invention;
- Figure 3 is a flowchart of a method according to an embodiment of the present invention as enacted by a router;
- 10 Figure 4 is a block diagram of a router in accordance with an embodiment of the present invention; and
- Figure 5 depicts a mobile handset terminal for use according to an embodiment of the invention.

15

### Detailed Description

Figure 2 depicts an embodiment of a communication system 9 for multicast file delivery via the Internet 4 comprising a multimedia content provider 2, receiver hosts 3a-3c, a router 6, a radio transmitter 7 and a cache 10. The data path 5 may include further elements, such as other transmitters or routers, which may be located between the content provider 2 and router 6. The data paths leading from the content provider 2 to the receiver hosts 3a-3c have a common portion 5 extending between the content provider 2 and the router 6 and diverge between the router 6 and the individual receiver hosts 3a-3c.

In this particular example, receiver hosts 3a-3c are mobile devices belonging to a cellular wireless DVB-T wide area network (WAN) and the router 6 is an edge router, i.e. the last router before the air-interface in the file delivery path between the content provider 2 and the receiver hosts 3a-3c. The router 6 forwards the multicast data to the radio transmitter 7, which sends the data to the receiver hosts over the wireless network in accordance with a suitable communication protocol. Suitable protocols include, but are not limited to, the following protocols: Reliable



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### Acknowledgement of receipt

We hereby acknowledge receipt of the form for entry into the European phase (EPO as designated or elected Office) as follows:

Submission number	41328	
PCT application number	PCT/IB02/04004	
Date of receipt	25 February 2005	
Your reference	MCR/41125EP1	
Applicant		
Country		
Documents submitted	DESC.PDF application-body.xml package-data.xml	EPF1200.PDF ep-euro-pct.xml
Submitted by	CN=J-Hester1309,O=Venner Shipley LLP,C=GB	
Method of submission	Online	
Date and time receipt generated	25 February 2005, 14:54:35	
Digest	BD:FE:8B:B5:9B:7C:FF:1A:B7:8A:39:A3:CE:FD:D5:28:62:7 1:7A:21	

/European Patent Office/